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Part I: Smoking History in Families with Low and High Cancer Incidence.
Part II: Aryl Hydrocarbon Hydroxylase (AHH): Cancer Genetics.

Lung cancer, either site-specific or in association with cancers of other anatomic sites in family pedigrees, will be used for evaluation of genetic and/or familial factors which are thought to produce high and low cancer risks. Various etiological factors, such as cigarette smoking, will be analyzed in context with family history. Furthermore, aryl hydrocarbon hydroxylase (AHH) will be examined in selected high and low cancer risk patients from these kindreds.

Extensive tumor and genealogic documentation will allow critical appraisal of the significance of AHH findings. AHH inducibility will be measured in lymphoblasts from patients with low and high risk cancer prone kindreds for the purpose of determining familial patterns of AHH induction susceptibilities (low, medium and high). Possible associations between cancer risk and the inducibility of AHH will be correlated with various histologic varieties of cancer, their genetic modes of transmission, and interaction with cigarette smoking.

The investigators plan to expand their population pool of lung cancer prone families through association with cancer institutes, community physicians, and through utilization of letters indicating their interest in these kindreds to be published in State Medical Journals from seven neighboring midwestern states. This will grant a sizable clinical pool so that specific cancer prone genotypes might be more readily identified and subjected to critical evaluation by the standard medical genetic protocol, as well as through specialized laboratory studies including AHH.

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